

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of establishing a proteomic interaction map for ~~comparison of pathophysiological and physiological processes comprising the steps of~~

(a) ~~determining proteomic interactions of a protein in the absence of a simulated redox state perturbation for the pathophysiological process in the presence of simulated redox state perturbation(s) that is characteristic of the pathophysiological process;~~

(b) ~~determining proteomic interactions for of a protein the physiological process in the presence of a simulated redox state perturbation that is associated with the physiological process; and~~

(c) ~~generating the proteomic map by identifying different proteomic interactions between (a) and (b).~~

2. (Currently Amended) The method of Claim 1, wherein the simulated redox state perturbation is generated by a process selected from the group consisting of: variation of concentration of redox state modifier molecules from physiological state, variation of glucose concentration from physiological state, presence of metal ions, alteration in NADH ratio, and oxygen concentrations less than room air. ~~further comprising comparison of the proteomic interactions determined in (a) and the proteomic interactions determined in (b) to determine proteomic interactions that are causally related to the pathophysiological process.~~

3. (Currently Amended) The method of Claim 1, wherein the simulated redox state perturbation is generated by addition of a redox state modifier molecule selected from the group consisting of superoxide, peroxides, hydrogen peroxide, alkoxides, sulfoxides, brominating species, chlorinating species, nitrosating molecules, nitric oxide, S-nitrosothiols, nitrating molecules, peroxynitrite, NO<sup>-</sup> generating molecules, glutathione-regulating enzymes, NADH-regulating enzymes, and flavin-regulating enzymes. A method of identifying target proteins related to a disease comprising challenging cells involved in the disease with agent(s) to produce and identify redox state related modifications of proteins and/or lipids that would subsequently mediate protein modification or that are characteristic of the disease.

4. (Cancelled)

5. (Currently Amended) A method of correlating proteomic~~protein~~-interaction(s) with oxygen tension comprising ~~determining protein interaction(s) in the presence of an oxygen tension different from that in room air~~

- (a) determining proteomic interactions of at least one protein in room air;
- (b) determining proteomic interactions of at least one protein in the presence of decreased oxygen tension; and
- (c) correlating the proteomic interaction(s) with oxygen tension by identifying different proteomic interactions between (a) and (b).

6. (Currently Amended) The method of Claim 5 where ~~any set of~~ at least one proteins are employed in the determination, ~~which are~~ is associated with a physiological process or a pathophysiological process.

7. (Currently Amended) The method of Claim 5 where a plurality of determinations are made in step (b) with different oxygen tensions being employed in each determination.

8. (Currently Amended) The method of Claim ~~5~~ 7 where the oxygen tensions employed are in step (b) range from 0.1 mm Hg to 145 mm Hg increments of 5 or 10 mm Hg.

9. (Currently Amended) The method of Claim ~~6~~ 5 where the different interactions in step (c) are used to identify protein functions associated with a pathophysiological process. the set of proteins is associated with a physiological process and the method is used to identify normal protein functions.

10. (Cancelled)

11. (Withdrawn)

12. (Withdrawn)